

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## A2 CC Review Sheet for Exam 3 Quarter 1

Please answer all questions and show all work on a separate sheet of lined paper. This sheet must be completed by Thursday, 11/3. Exam 3 is Friday, 11/4. This review sheet is **not** comprehensive. In order to fully prepare for this exam you need to go over your notes, homework assignment, old exams.

In 1 - 7, perform the indicated operations and express answers in simplest form.

1.  $\frac{x^2 - 3x}{2x^2 + x - 6} \div \frac{x^2 - 5x + 6}{x^2 - 4}$

2.  $\frac{x^2 - 9}{x^2 - 5x} \cdot \frac{5x - x^2}{x^2 - x - 12} \div \frac{x - 4}{x^2 - 8x + 16}$

3.  $\frac{x - 7}{6} - \frac{3x - 2}{12}$

4.  $\frac{2}{x + 3} + \frac{1}{x}$

5.  $\frac{3}{x - 2} + \frac{4}{x^2 - 4}$

6.  $\frac{3}{x^2 - 4} - \frac{2}{2 - x}$

7.  $\frac{x - y}{x + y} - \frac{x + y}{x - y}$

8.  $\frac{3y^2 + 11y + 10}{5y^2 + 11y + 2} \div \frac{3y^2 - y - 10}{1 - 25y^2}$

In 9 - 16, factor each completely.

9.  $3x^2 - 12$

10.  $27y^3 - 64$

11.  $x^3 - x^2 - 6x$

12.  $4x^2 - 6x - 4$

13.  $5a^2 + 14a - 3$

14.  $a^3 - 2a^2 + a - 2$

15.  $x^2 + ax + bx + ab$

16. Find the sum of  $x\sqrt{3}$  and  $\sqrt{75x^2}$

17. Simplify:  $5\sqrt{-27} - \sqrt{-108} - 3\sqrt{-75}$

18. Simplify:  $\frac{2}{3-\sqrt{2}}$

19. Simplify:  $\frac{5x^2-15x}{27x-3x^3}$

20. Write the value(s) of the variable, if any, for which the fraction is not defined:

(a)  $\frac{5}{3-x}$       (b)  $\frac{10}{x^2-25}$       (c)  $\frac{x^2-49}{2x^2-3x}$       (d)  $\frac{x^2-x-2}{x^3+x^2-2x}$

21. Simplify:  $\frac{19}{x+7} + \frac{2}{7+x}$

22. Solve:  $x - \sqrt{9-2x} = 3$

23.  $\sqrt{2x+1} - 1 = 4$

24. Express in simplest form:  $-i^{50} + i^{51}$

25. Express the product in  $a+bi$  form:  $(4-5i)(2+i)$

26. Solve for  $x$ :  $2^{x+1} = 16$

27. Solve for  $x$ :  $\left(\frac{1}{3}\right)^{x+1} = 27$

28. Solve for  $x$ :  $2x^{\frac{2}{3}} + 4 = 22$

29. Solve for  $x$ :  $2\sqrt{2x+3} + x = 1$

30. Solve for  $x$ :  $\sqrt{x-1} + x = 7$

31. Simplify:  $\frac{\frac{1}{x^2} - \frac{1}{y^2}}{\frac{1}{y} + \frac{1}{x}}$

32. Simplify:  $\frac{\frac{x}{x+2}}{1 - \frac{x}{x+2}}$

33. Simplify:  $\frac{3x^{-1} - \frac{x}{3}}{3^{-1} + x^{-1}}$

For 34-36, simplify the expression and eliminate any negative exponents.

34.  $(6x^6y^2)^2 \left( \frac{x^5y^2}{2} \right)$

35.  $(r^2s)^3(3s)^{-2}(9r)^2$

36.  $\frac{a^4b^{-2}c}{a^{-5}b^5}$

For 37-39, rewrite each expression in radical form. (Assume all variables are positive.)

37.  $4a^{\frac{2}{3}}$

38.  $x^{\frac{-3}{4}}$

39.  $(5y)^{\frac{3}{8}}$

40. Simplify:  $\sqrt[3]{32x^7y^9z^2}$

41. Simplify:  $\frac{6\sqrt{8x^3} - 9\sqrt{10x^5}}{3\sqrt{2x}}$